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First National Survey of Blind Students Enrolled in Colleges and Universities

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UNTIL RECENTLY no official statistics have been available showing the number of blind and partially seeing students enrolled in institutions of higher education in the United States.

In March 1957, at the request of Recording for the Blind, Inc.,[1] the Office of Education, Department of Health, Education, and Welfare, sent questionnaires to all institutions of higher education in the 48 States, District of Columbia, Canal Zone, Guam, Puerto Rico, Hawaii, and Alaska. The 2,228 questionnaires (1,886 for institutions in the Office of Education *Directory* and the remainder for their branches) asked for "information about the number of blind and partially seeing students in institutions of higher education and the special equipment available for the use of these students." It was the first such national survey ever to be made.

Although few blind students are enrolled in colleges and universities today, the available sources of information reflect a growing desire of young blind persons to carry their education beyond that given in residential schools or special classes in public schools.

The letter accompanying the questionnaires sent to the registrars, pointed out the information called for would help determine the size of the problem of developing and supplying such students with the specialized services which would make their educational opportunities comparable to those of sighted students. It also requested registrars whose institutions enrolled blind or partially seeing students to send these students' full names and present college mailing addresses to Recording for the Blind, Inc., and Volunteers Service for the Blind, Inc., (332 South Thirteenth St., Philadelphia 7, Pa.).

"Both of these organizations," the letter said, "prepare disc recordings especially for blind stu-

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[1] Recording for the Blind, Inc., is the only national organization that records textbooks for blind college and vocational students. The organization is an outgrowth of a committee formed to record books for blinded veterans of World War II. With a 3-year terminal grant in 1951 from the Fund for Adult Education, the group established the national organization to further adult education for the blind.

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dents. They are non-profit and provide their services free of charge. The book recordings are designed for use on the 'Talking Books' playback machine provided by the Library of Congress."

Number of Blind Students Reported

In response to the 2,228 questionnaires, 2,032 (91.2 percent) returns were received (see table 1). Of this total response, 1,606 (79 percent) reported that no blind or partially seeing students were attending their institutions. While 52 (2.6 percent) institutions reported none were then attending, this figure should not be considered an indication of the number of institutions which had had blind students in the past or had accepted blind students for future enrollment; it should be assumed that most institutions reporting followed literally their instructions to note number of students attending "at the present time." Eleven (0.5 percent) institutions reported that they had no statistics on blind students. Of these 11 institutions, one wrote, "We do have some"; and another "We have blind students but we have no statistics." The remaining 415 (20.4 percent) institutions reported an enrollment of 915 blind students. Table 2 shows the distribution by States, and table 3 the institutions having the largest blind student enrollment.

Need for Specialized Services

Sixty-seven institutions complied with the Office suggestion and sent the names of 170 students (18.6 percent of the total number reported) to Recording for the Blind, Inc. Of these students, 21 (12.2 percent) were already active users of the service offered; 34 students (19.8 percent) applied for service for the first time as a result of the survey. (See table 4.)

In transmitting student names, several of the 67 institutions made comments, some of which follow:

> This is the first experience we have had with a blind student and we have been tremendously impressed with his adjustment and progress.
>
> * * * We would appreciate any services you might offer. Perhaps you might also have suggestions for us as a school which might make it possible for us to be of greater service to them.
>
> The following girl is a full-time student in good standing * * * [she] is totally blind.
>
> Will you please send literature describing your disk recording to _____, a blind student [and] an honors student * * *
>
> I would greatly appreciate your assistance in the following matter: _____ is a blind student in our sophomore class * * *
>
> I foresee immediately great difficulties in his studies, because he is entering a specialized field of orthodoxy, which requires priesthood training * * * he needs his training in orthodox theology, canon law, and other pertaining subjects. He has no possibility of finding any textbooks in Braille * * *
>
> _____ is a partially seeing student. She possesses potentialities of being a very good student, but is very dependent at present on the charity and good will of her classmates. Her parents read aloud to her each evening, and she has been able to do more than average work in all her classes * * * [She] will appreciate any assistance you may be able to offer her.

Effectiveness of the Survey

What effect has the Office of Education survey had on application for services provided for blind students?

Since Recording for the Blind, Inc., has been founded, it has provided recorded textbooks for more than 1,100 people. The number has been increasing year by year as more students and educational administrators have found out about the program. The recent increase indicates that the survey has effectively served the additional purpose of acquainting the blind and partially seeing students with this service. In 1956 Recording for the Blind, Inc., received requests for textbooks from 404 users, of whom 104 were new applicants; and in 1957, and particularly in that period after the Office sent out its questionnaire, the number of applications from new users increased by 311, or approximately 200 percent.

The impetus given by the survey is cumulative and self-perpetuating, inasmuch as many of the institutions will inform future blind students of the availability of recording services of Recording for the Blind, Inc.

Institutions With Braille Books

The survey also sought to ascertain how many institutions have Braille books. There were 42 replies in the affirmative, but 15 of these replies were noted on questionnaires received from institutions reporting no blind students. (See table 1.) Although the questionnaires called for "yes" and "no" answers, several institutions answering "yes" made such comments as the following: "A few," "dictionary and *Reader's Digest*," "bookstore will order," "very few." Some of those answering "no" also commented: "Braille dictionary and encyclopedia only," "only 2 references," "7 vols. of *Reader's Digest*," "have obtained music in Braille for student," "Bible only." Several institutions pointed out that Braille books were obtainable through the public libraries, charitable organizations, and State commissions.

Table 1.—Blind and partially seeing students enrolled in institutions of higher education, 1957–58

Number of institutions	Number of blind students enrolled		Number of institutions with Braille books	Number of institutions with special study equipment
	Per institution	Total		
1,606 [1]	0	0	[2] 15	[2] 14
242	1	242	12	9
73	[3] 2	[3] 146	2	7
46	3	138	3	8
18	4	72	1	4
11	5	55	2	4
25	Various	262	7	11
11 [4]				
Total, 2,032		915	42	57

[1] 52 have "no blind students at present."
[2] Braille books and special study equipment available because of past blind-student enrollment.
[3] The registrar of a large State university noted on the questionnaire "I know of only 2 who are currently enrolled, however, as no university record is made there may be others."
[4] These institutions reported no statistics; 2 reported having blind students but could not give the number.

Table 2.—Blind students in institutions of higher education, by State, 1957–58

State	Number of students	State	Number of students
Alabama	10	Nebraska	17
Arizona	13	New Hampshire	5
Arkansas	14	New Jersey	12
California	114	New Mexico	9
Colorado	10	New York	91
Connecticut	11	North Carolina	28
District of Columbia	4	North Dakota	1
Florida	18	Ohio	25
Georgia	20	Oklahoma	14
Idaho	2	Oregon	16
Illinois	68	Pennsylvania	36
Indiana	26	Rhode Island	2
Iowa	5	South Carolina	9
Kansas	22	South Dakota	8
Kentucky	9	Tennessee	19
Louisiana	10	Texas	43
Maine	5	Utah	8
Maryland	15	Vermont	1
Massachusetts	36	Virginia	10
Michigan	49	Washington	14
Minnesota	21	West Virginia	9
Mississippi	11	Wisconsin	14
Missouri	19	Alaska	1
Montana	4	Hawaii	7
		Total	915

Table 3.—Institutions with highest enrollment of blind students 1957–58

Name of institution	Number of blind students enrolled
University of California, Berkeley	30
City College of the City of New York	25
Wayne State University	19
University of Michigan	13
Chicago City Junior College, Wright Branch	12
Kansas State Teachers College	12
University of Minnesota	12
Southern Illinois University	12
Arizona State College	9
Indiana University	9
University of North Carolina	9
San Francisco State College	9
Texas Technological College	9

Table 4.—Number of new students applying for recorded books as a result of the Office of Education Survey

[67 institutions send lists of student names to Recording for the Blind, Inc.]

Number of institutions reporting	Number of blind students enrolled		Number of students already receiving recorded texts	Number of new applicants for recorded texts
	Number in each insitution	Total		
37	1	37	5	9
10	2	20	3	5
12	3	36	6	6
1	4	4	1	1
2	5	10	1	3
2	9	18	2	3
1	12	12		1
1	13	13	1	2
1	20	20	2	4
Total, 67		170	21	34

It can readily be seen that the number of institutions having Braille books is small—and, in some instances, even those institutions have a small number of books on hand.

Institutions With Special Study Equipment

There were 57 replies in the affirmative to the question "Does your institution have any other special study equipment for the use of blind students?" Fourteen of these replies were noted on questionnaires received from institutions reporting no blind students. (See table 1.) From the com-

ments on these questionnaires, "special study equipment" appears to be defined as reading rooms, records, tape recorders, reading stands with lenses to amplify print, large print books, campus maps, and readers. Several institutions noted that students supplied their own equipment or got equipment through the Veterans Administration and the Cooperative State-Federal Vocational Rehabilitation Program. On the other hand, some institutions, which answered "no" to the question, stated they had set aside reading rooms for the use of the blind, had recordings, made a playback machine available or provided readers. One of these institutions, reporting 3 blind students, wrote "2 have readers, 1 has no help but could do better if she had."

The number of institutions reporting that they have special equipment for blind and partially seeing students is small, and the interpretation of what "special equipment" consists of varies.

Educational Needs of Blind Students

The integration of blind and sighted students in school and classroom is increasing. While their educational needs are not being fully met, the possibility of doing so is within reach. Each year, as institutions of higher education open their doors to these students, more aid and tools for learning can be extended to them.

Despite the meagerness of the tools and help presently available, blind and partially sighted students are able to compete successfully with sighted classmates. More and more the young blind, ambitious and potentially able to hold other than handicraft jobs, will seek a college education.

Three important aids can be offered those seeking higher education: Reader service, Braille books, and recorded books. Each is important.

Reader service provides personal contact and discusion, both invaluable to the student. The drawbacks are the dependency on reader availability, the hesitancy of blind students to ask a reader to repeat difficult passages again and again, and the expense of reader service.

Braille is an excellent aid, not only for study but for note-taking. The drawbacks are length of training period to acquire ability to read quickly, tactile fatigue, size and bulk of volumes, length of time required to transcribe volumes into Braille, and expense of acquisition.

Recorded books offer a solution for newly blind persons who have not had time to learn Braille and for those who find it too difficult. Books can be recorded for the individual student, and the rapidity with which recordings can be made makes them particularly useful where newly published texts are assigned. Furthermore, it is not necessary to wait until a book is completed, as the records can be mailed out a few at a time, which will enable the student to keep abreast of class assignments. With recordings, students are not dependent on reader availability, and they can read difficult sections again and again. The drawbacks are difficulty of "dipping" into previously read material; charts, graphs, tables, and formulas are not easily recorded.

Fortunately, the installation of new recording equipment this past summer by Recording for the Blind, Inc., makes possible the recording of textbooks in multiple copies. With help, this program can eventually result in keeping abreast of student demand and in building up a library of collateral reading.

Summary

The blind must live their lives among the sighted; more and more it is felt that there is no better time or place to learn to do this and to adapt themselves to such conditions than in the schools. Thanks to the enlightened attitude of educators, the integration of blind and sighted students in the classroom is increasing.

Despite their visual handicaps, blind and partially seeing students are able to compete successfully with their sighted classmates. The Office of Education has found that there are 915 blind students enrolled in 415 institutions, and that few institutions have Braille books or special study equipment to offer blind students. The 200-percent increase in new-user applications for service received by Recording for the Blind, Inc., in 1957, indicates the eagerness of blind students to obtain study aids. In the future, as knowledge of the availability of such help spreads, more young blind students will seek to extend their education.

Blind and partially sighted students are making a courageous and successful effort to obtain higher education. With aid extended them in the form of reader service, Braille books, and recorded texts, more blind students will seek higher education and take their places in society as self-supporting members.

Federal Civilian Education Programs In the Natural Sciences: Part I

By CLARENCE B. LINDQUIST*

TO HELP meet the Nation's need for more scientists and engineers, the Federal Government has in recent years expanded its educational programs and increased its support for education in the natural sciences, including mathematics. These programs are conducted under the auspices of various departments and agencies in accordance with their functions, special interests, or the national welfare. This article [1] is confined to federally supported educational programs available to civilians, both those employed by the Federal Government and those not so employed.

The National Science Foundation

The National Science Foundation was created in 1950 by the 81st Congress to develop and encourage the pursuit of a national policy for the promotion of education in the sciences. The Foundation's Division of Scientific Personnel and Education is responsible for programs related to the training of scientists and engineers. While the formal training programs are centered in this division, training is a collateral function of the grants programs in other divisions. Through the grants program it is estimated that approximately 1,000 students receive financial support.

Predoctoral and postdoctoral fellowships.—Predoctoral and postdoctoral fellowships in the mathematical, physical, medical, biological, and engineering sciences are awarded annually and semi-annually, respectively, by the National Science Foundation. The awards are open to American citizens and are made at the predoctoral level for an academic or a full year and at the post-doctoral level from 6 to 24 months. Fellows may apply for renewal.

Predoctoral applicants are required to take examinations for scientific aptitude and achievement. These tests are administered by the Educational Testing Service, Princeton, N. J. Test scores, academic records, and recommendations on each candidate's abilities are then considered by panels of scientists in the fields of the candidates. Postdoctoral candidates are not required to take the examination. The review of applications is conducted for the Foundation by the National Research Council, and fellows are selected by the Foundation, with the approval of the National Science Board, on the basis of ability. In cases of substantially equal ability, predoctoral awards are made in such a way as to give wide geographical distribution.

Fellows may attend any accredited nonprofit American or approved nonprofit foreign institution of higher education. Stipends for fellows are $1,600 for the first year, $1,800 for intermediate years, and $2,000 for the terminal year of graduate study. Postdoctoral fellowships carry a stipend of $3,800 for the first 12 months and $4,200 for the next 12. Travel, tuition, and dependency allowances are also available to fellows.

Senior postdoctoral and science faculty fellowships.—Two other fellowship programs are offered: A senior postdoctoral fellowship program and a faculty fellowship program. In the senior postdoctoral program, awards are made to persons who have received their doctoral degrees at least 5 years prior to their application. This program provides opportunities for scientists who have demonstrated superior accomplishments in a special field to become still more proficient in their specialties by studying and doing research in outstanding laboratories. The faculty fellowship program improves standards of college-level science instruction by providing teachers of science with opportunities for advanced study and for pursuing courses that will give them a broader understanding and knowledge of their fields.

For either a senior postdoctoral or science faculty fellow, the stipend is on a matching basis, but the award is adjusted so that the combined support of the Foundation and other sources (for example, other fellowships or sabbatical year pay) will not exceed $10,000 per annum. Allowances for travel, tuition,

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[1] Pt. I is devoted primarily to education programs in the physical sciences and engineering. Pt. II, to be printed in a later issue of this magazine, will be devoted primarily to the biological, health, and agricultural sciences.

and other normal expenses are also provided. Results of research carried out by a fellow during his training may be made available to the public, except as restricted in the interest of national security.

Postdoctoral awards are made in October and March; senior postdoctoral and science faculty awards are made in December; predoctoral awards are made in March. Applications must be received well in advance of the months in which awards are made to allow time for screening and other essential processing. From its appropriated funds for the present fiscal year, the Foundation is awarding 756 predoctoral, 109 postdoctoral, 47 senior postdoctoral, and 89 science faculty fellowships.[2]

The institutes programs.—Three types of institutes programs are directed toward the improvement of science teaching through supplemental subject-matter training: (1) summer, (2) academic year, and (3) inservice institutes.

1. Summer institutes for high school and college teachers of science and mathematics have been supported by the Foundation since 1953. During the summer of 1957, 96 summer institutes were conducted, and 108 have been announced for the summer of 1958. Of the 1958 institutes 100 will be open to high school teachers only, 3 to high school and college teachers, and 5 to college teachers only. Roughly 5,000 high school teachers and 250 college teachers will be enabled to participate through stipends which allow up to $75 a week, and dependency allowances of $15 a week for each dependent (to a maximum of 4). Travel allowances are available, and tuition and fees will be covered by the Foundation's grants for the institutes.

2. Academic-year institutes have been designed for high school teachers of science and mathematics who can devote a full school year to academic study. These institutes provide: (1) Financial support of the teacher-participants, and (2) special subject-matter courses prepared to meet their needs. Two exploratory institutes were conducted in 1956–57, and 16 during the school year 1957–58; 19 have been announced for 1958–59. The 1958–59 program will provide instruction for approximately 950 teachers, for whom the Foundation will provide a maximum stipend of $3,000, plus allowance for dependents ($300 each, up to a maximum of 4 dependents) and travel (2 round trips from home to institute at the rate of 4 cents a mile, with a maximum of $80 each round trip). Tuition, other fees, and allowance for books will also be covered.

3. Inservice institutes, which meet during the academic year but outside regular school hours, offer courses in science and mathematics for high school teachers. Inservice institutes were first supported by the Foundation in the spring of 1957. The program has been expanded to the support of 21 institutes for the academic year 1957–58, and will probably be expanded still further in 1958–59. Inservice institute support does not provide stipends but does cover all tuition and fees and provide funds for travel expenses.

Special projects in science education.—This program provides for the exploration, evaluation, and support of promising new programs which fall within the overall objectives of "strengthening education in the sciences." The program is a means by which the Foundation may support a variety of activities designed to encourage and develop the scientific talents of young people. The projects in this program are grouped into three general categories.

1. Student programs, which are directed primarily toward the identification and motivation of potential scientists, and cover a broad range. They include the visiting scientists program, traveling science libraries, traveling science demonstration lectures, support of science clubs and student projects, career development programs, and others.

2. Course content improvement programs, which are intended to help to bring the subject matter of science instruction up to date and to put it into form which will best serve the needs of science students. Attention will be given, also, to the development of supplemental teaching aids which will be required in connection with the revised subject-matter materials.

3. Teacher improvement programs, which are directed toward finding ways, in addition to the institutes programs, for improving the subject-matter knowledge of science and mathematics teachers. A number of projects in this category have been undertaken, consisting largely of refresher courses and short institutes for science teachers at all levels.

Atomic Energy Commission

The Atomic Energy Commission engages in a variety of activities directed toward increasing the number of scientists and engineers trained in nuclear

[2] The Foundation is presently seeking supplemental funds from the Congress to increase the number of fellowships and institutes.

science and technology. The Commission sponsors special training schools, provides direct assistance to individuals and institutions, and enters into cooperative arrangements with educational and industrial groups.

Special schools.—Since its establishment in 1950, the Oak Ridge School of Reactor Technology, a unit of Oak Ridge National Laboratory, Oak Ridge, Tenn., has provided a year of graduate instruction for over 500 scientists and engineers in nuclear reactor technology. More than 2,800 scientists and engineers have completed a 1-month course in the principles and use of radiation instruments and safe handling and use of radioisotopes at the Radioisotopes Training School of the Oak Ridge Institute of Nuclear Studies. The International School at Argonne National Laboratory at Lemont, Ill., provides a year of graduate training in nuclear science and engineering. Students first receive a semester of instruction at Pennsylvania State University or North Carolina State College, with the second semester in residence at the International School. As of January 1957, the International School had graduated 162 students, 116 of whom were from 34 foreign countries.

Fellowships.—The Commission supports special fellowships in nuclear energy technology, radiological physics, industrial hygiene, and industrial medicine. Special fellowships in nuclear energy technology provide 1 year of graduate study for 150 fellows a year at accredited and approved colleges of engineering. The radiological physics program consists of 9 months of formal graduate study at one of four universities and 3 months of specialized training and field work at one of three Commission facilities. The universities and cooperating Commission facilities are: Vanderbilt University with Oak Ridge National Laboratory, University of Rochester (N. Y.) with Brookhaven National Laboratory, and University of Washington and University of Kansas with Hanford Works. The program started in 1951 and as of last year has had 274 participants.

The Oak Ridge National Laboratory cooperates with the Massachusetts Institute of Technology to provide selected graduate engineering students with experience in the application of fundamentals to research, design, development, and production problems. Through its research contracts the Commission provides training for graduate students of science and engineering.

Other programs.—In cooperation with the National Science Foundation and the American Society for Engineering Education, the Commission has sponsored summer institutes in nuclear energy technology for faculty members of engineering colleges. Courses have included nuclear physics, nuclear engineering, metallurgy, instrumentation, and chemical engineering. Cost-of-living allowances and travel costs are granted the participants.

The Commission is providing, in cooperation with the National Science Foundation and participating universities, radioisotope training for high school science teachers. As an adjunct to the training for high school teachers, the Commission furnishes each teacher a radioisotope demonstration kit for use in his home school. In addition, it has mailed hundreds of packets of specially prepared literature on nuclear technology to teachers requesting them and more than 5,000 student packets in response to student requests.

Assistance to educational institutions.—The Commission offers colleges and universities assistance in establishing certain courses in the nuclear energy field by providing special equipment and materials. It makes grants toward the cost of acquiring equipment for courses and laboratory work dealing with nuclear energy technology. It also grants financial assistance for specialized educational and training equipment; however, the total aid for any single institution cannot exceed $350,000. It does not provide for the purchase of standard equipment, such as desks, benches, and tables with assistance funds nor does it provide funds for construction or modification of buildings, utility systems, or laboratories to accommodate equipment.

The Commission lends certain nuclear materials to educational institutions for use in educational and training programs, and also lends source and special nuclear material without charge for use or burn-up. It does not charge for fabricating fuel elements, for preparation of fuel solutions, or for reprocessing of used nuclear fuel. It supplies by-product materials, chiefly radioisotopes, at 20 percent of list price and other materials exclusively related to nuclear energy technology without charge. The value of materials, other than source and fissionable materials, the Commission lends to any single institution may not exceed $50,000.

The Commission makes grants toward the cost of acquiring specialized equipment for training courses in radiation biology and in the use of radioisotopes

in research to encourage the training of medical students, graduate students, and physicians in the use of radioisotopes in medicine, biology, and agriculture. The grants are available to schools which have not been able to start courses in the use of radioisotopes for the lack of the specialized equipment required. They can be secured by schools of medicine, public health, and agriculture and by colleges and universities giving courses in the life sciences.

More detailed information on the various educational programs of the Atomic Energy Commission is contained in the leaflet, *Training and Educational Assistance*, available through the Industrial Information Branch, Technical Information Service, Atomic Energy Commission, Washington 25, D. C.

Student Trainee Program

An expanding educational program of considerable importance throughout the Federal establishment is work-study training. GS–2 ($2,960 per annum), GS–3 ($3,175 per annum), and GS–4 ($3,415 per annum) positions are available to student trainees in this program.

Nature of the program.—Persons appointed to student trainee positions participate in special training programs consisting of on-the-job training in a Federal agency and regular scholastic training in an accredited college or university. While on the job, student trainees work under the guidance of and assist professional personnel in one or more of the scientific and engineering, or allied fields, performing preprofessional duties relating to the field for which they are being trained.

The work and study phases of training, according to Civil Service Announcement No. 18, issued October 18, 1957, may be carried on concurrently as a result of the student trainees being employed part-time while in school attendance, or they may be alternated through employment of the trainees either during summer vacation periods of regular full-time colleges or universities or during the practical work-experience periods provided for in the cooperative educational programs of colleges operating on the cooperative basis. Both work-training and attendance at the educational institution are essential parts of the duties of the position. Student trainees generally receive no salary for time spent in college study, and they must defray all expenses incidental to their college attendance. However, provision may be made in some cases for the payment of tuition or other expenses and/or the payment of salary for periods of attendance at college.

Student progress.—Students enter the training program at a grade level consistent with their academic progress and may be promoted to the various higher trainee grades, without further competitive or written examinations, at such times as they have completed prescribed parts of the combined work and college requirements of the training program. After satisfactorily completing each period of on-the-job training, students are generally granted leave or furlough to return to college. Upon his satisfactory completion of a period of college study, the employing agency may, if it has suitable positions open, return the trainee to his former position and grade, or may promote him, if eligible, to a higher trainee grade, or may reassign him to a nontrainee position for which he is qualified.

A trainee may not remain in the same grade of trainee position for more than 24 months, including the time he spent in college. However, if his work-study program is interrupted by military service, the limit on the time in grade may be extended by the amount of time he has spent in the military service.

Upon a trainee's completion of all the requirements for the bachelor's degree including the specialized courses specified in the examination announcement for the particular professional position for which he is being trained, he may be promoted noncompetitively to professional positions at GS–5 grade in the field for which he has been trained. Trainee experience in the higher grades may in some instances be used in partial fulfillment of the experience requirements for promotion to the GS–7 professional grade.

Requirements.—An applicant must be a citizen of or owe permanent allegiance to the United States and must have reached his 16th birthday on the date of filing application. He must be physically able to perform efficiently the duties of the position. Any physical condition which would cause the applicant to be a hazard to himself or to others will disqualify him for appointment.

To be eligible for a GS–2 position, an applicant must have successfully completed all the high school courses required for admission to an accredited college or university leading to a bachelor's degree in the specialized field in which he will work as a trainee. For GS–3, the applicant must have completed 1 full academic year of study and for GS–4, 2½ full academic years of study. Written examina-

tions are required for GS–2 positions. For employment in some agencies, written examinations are required for GS–3 and GS–4 grades.

It is not possible to list here all of the places where student trainee opportunities are available. Announcements are issued periodically by the United States Civil Service Commission, Washington 25, D. C., its regional offices, or its examining boards of participating agencies. These announcements contain information on the kinds and locations of positions available, specific requirements, and other pertinent data.

Programs Federally Sponsored But Not Federally Budgeted

National Bureau of Standards Graduate School.—Established in 1908, the graduate school, located in Washington, D. C., is the oldest of several advanced educational programs sponsored by the Government primarily for employees in the area of the physical sciences. Federal funds are not appropriated or specifically spent for the administration of the school, but the Bureau does provide classroom and laboratory space, library facilities, and instructional material. Specialists from the Bureau's staff form the major part of the teaching staff; the others are professors from universities cooperating in the program.

The same administrative staff handles the in-hours education and training programs that are a part of the Bureau's official specialized education and training, as well as the out-of-hours' courses for which students pay a fee. Each year there is an enrollment of approximately 1,000 students in an average of 40 courses.

Even though this graduate school is not a degree-granting institution, a student may earn credit for course work toward a degree and transfer it to a cooperating university or college in which he is enrolled. Students have used either course or dissertation work, completed at the school, as a partial fulfillment of their requirements for degrees.

The Bureau is also authorized to support up to 10 postdoctoral research associateships each year for young investigators of unusual abilities and promise in chemistry, mathematics, physics, engineering, and allied fields.

Department of Agriculture Graduate School.—Since its establishment in 1921, the objective of the Department of Agriculture Graduate School has been to improve the Federal service by providing needed educational opportunities for Federal employees. It now offers a resident evening program in Washington and a small correspondence program. Graduate study is the primary interest of the school, but it also offers an undergraduate program. Graduate school classes are open to all qualified employees of the Federal Government and to other qualified persons as facilities permit.

The school offers courses in the biological sciences, mathematics and statistics, the physical sciences, and technology as well as in the nonscience areas. It does not grant degrees, and has never sought that authority. If a student wishes to receive credit at a degree-granting institution for courses taken at the Graduate School, he is urged to consult with this institution in advance. The Graduate School receives no Federal funds and is a nonprofit institution. The faculty, which numbers approximately 375, is recruited principally from scholars employed in the Federal service. In general, fees are computed at $12 per semester hour, and students employed full-time are not permitted to carry more than two courses at one time unless they have special permission.

High School Mathematics Project at Illinois

THE FIRST COURSE of the new University of Illinois high school mathematics curriculum will be tested in from 25 to 50 schools throughout the country beginning in September. These schools will be in addition to 12 pilot schools currently using the college preparatory mathematics courses being developed at the university. The course has been taught in pilot schools for 5 years under university supervision. Second-, third-, and fourth-year courses are in preparation, but will be used only in the pilot schools next year.

The Illinois mathematics curriculum for high schools integrates algebra, geometry, trigonometry, analytical geometry, and even more advanced mathematics into its program instead of compartmentalizing them in separate courses.

The project, which has been under way for about 7 years, is sponsored by a joint committee representing the University's Colleges of Engineering, Education, and Liberal Arts and Sciences. It has been partially supported by a grant of $277,000 from the Carnegie Corporation of New York.

Safety in the College Environment

By JOHN MORRIS*

THE YEARS following the end of World War II have seen a steady growth of interest in higher education in the teaching of safety and in the safety of the campus environment. Prior to this time there may have been a few universities which employed full-time safety engineers or safety specialists. Now there are more than thirty, and their number is growing steadily. Just as significant is the growth of interest in the smaller colleges, where the size of the college may not always justify hiring a specialist, but where safety is given attention through some other arrangement.

There are probably a number of reasons for this development. The cost of accidents and of disabling work injuries have mounted steadily in the field of education as in all others, and since the merits of conserving manpower and money through an active safety program have long been practiced in industry, it is logical that higher education should also establish such programs. Another reason may be that the liability of the institution to its various publics has become well defined in costly judgments, with the result that even large land-grant institutions have found it expedient to insure public liability exposures at high limits, and suits against the institutions have been permitted by their controlling legislative bodies. Further, fires have gutted college buildings in an era when building space is in great demand, and nearly always under circumstances indicating the lack of the most basic fire safety program.

These are cost factors, but more important still is the altruistic concept of safety in the campus environment, the principle of teaching through example, which was well stated by Dean Trabue[1] of Penn State:

> The mere listing in a college catalogue of a course called "Safety" does not discharge the institution's obligation for building habits of safe living. In fact, many colleges which provide no course at all in safety are probably meeting their responsibilities in this field more effectively than are other colleges that offer several safety courses * * *
>
> The college must * * * teach safety by example as well as by precept * * * Any college or university that undertakes to meet its obligations in the area of safety education must examine not only its instructional programs in agriculture, engineering, liberal arts, science, teacher education, and extension, but it must also examine carefully its own grounds, buildings, and equipment to see that they are fully reinforcing rather than weakening the safety lessons being provided by its faculty * * *

The dean's statement of the case is still valid. It was stated again quite recently, and under very different circumstances, in these words: "Can we expect higher standards from our students * * * than the administrators of our educational institutions are willing to establish for themselves and their faculty?" His question arose, strangely enough, from the action of one college in inducing a football coach to cancel a contract with another college.

The most important single factor in the college safety effort is the active interest and support of top administration, and a program based on anything less will operate under handicaps. To make this interest and support formal, the institution will find that written policy statements are essential in making known the stand of the administration. As in industry, which has been about 30 years ahead of higher education in the development of safety methods, it is recognized that such statements must not be mere window dressing for a safety program, but working principles of management of the institution. Such policy statements are of two types, general and specific.

Statements of Policy

The general statement of policy on safety, over the signature of a top administrator, is important in the public relations and promotional aspects of the safety program, because it publishes the express intention of the administration to support individuals and department heads in their efforts at promoting safety. Such a statement, taken from industry, was that of Walter S. Carpenter, Jr., as president of the DuPont Co., in 1946:

> I believe that employee safety is of prime importance for the following reasons: We in the DuPont Co. long ago concluded that the safety of employees is of the greatest interest to management, ranking in importance with production, quality of product and cost. We have found that maintenance of safe operating procedures in our plants is of benefit far beyond any resulting dollar savings, the human values involved being of greater importance to both employer and community. Also, the acceptance and practice of fundamental safety principles by management and men,

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[1] National Conference on Safety Education by Colleges and Universities, Cincinnati, Ohio, 1950.

with the reduction of personal injuries to a minimum, inject an element of team play which does much to foster a spirit of friendly cooperation throughout our company.

The other type of policy statement is one that is specific for a certain problem area or activity, but intended to apply throughout the institution as a rule of procedure having the stamp of administration approval. A statement on smoking in campus buildings, defining the type of locations where smoking is to be prohibited, is such a policy. The policy on student automobiles, where such a policy exists, is another with safety implications. So are these: Policy on fire drills in residence halls; policy on adherence to building codes in new construction; policy on first aid cabinets; policy on safe operation of college-owned automobiles; policy regarding field trips and excursions. General rules of procedure determined within an academic or operating department and applying only within the department may constitute department safety policy and such rules are also of importance in the safety program.

Areas of Concern

The safety program at a college or university must concern itself with such areas as the catastrophe hazard, residence hall fire safety, shop and laboratory safety, work operations, radiation and industrial health, and student activities. Emphasis on one or another of these areas may vary considerably according to the experience of the institution and day-to-day problems arising out of that experience.

First is the catastrophe exposure, involving a hazard to life of groups of people and thought of generally in terms of large crowds. Overselling of the proper capacity of an indoor arena to meet the public demand for tickets is not an uncommon abuse. So is the failure to provide adequate exits or the padlocking of exits which is sometimes done to protect an unwatched exit from being tampered with. Thousands of paying spectators may thus be jeopardized to prevent one or two from slipping in without paying. The hazards of portable grandstands or "bleachers" exist on many campuses. A continuing vigilance in these matters is an important responsibility of the college to its students and the general public.

Residence hall fire safety

A second field of concern is safety to life in residence halls. People like John Ahern, director, fire protection and safety engineering, Illinois Institute of Technology, have been telling us for several years that poor fire divisions, open stairways, and combustible interior finish make fire traps out of dormitories. We know, too, that the expected increase of enrollments will lead to another 30 years of life to many ancient college buildings, and some of them will be dormitories. A good deal of remodeling needs to be done to make some of them safe.

Dormitory doors should not be locked at night with dead bolt hardware, as some are. Automatic sprinkler protection, fire alarm systems, fire detection wiring are some of the available weapons for attacking the residence hall fire safety problem. These are details of concern to the college safety specialist. He may make recommendations to the administration on such old buildings, read plans for new dormitories and suggest modifications, and take part in planning and executing fire drills. Even in new dormitory buildings, fire safety cannot be taken for granted, as we have learned through disaster as recently as 1956.

Shops and laboratories

The third area of concern is that of shops and laboratories in academic departments. These are places with a constant risk of injury for students, research workers, and instructors. This should not be true, since all hazards of these areas are subject to intelligent control and such teaching institutions should be exemplary in the provision of safeguards and the promotion of safe methods of operation. Tragically, many colleges do not fulfill their obligation to teach shop and laboratory safety. The teaching laboratory in which eye protection is required of all students is the exception.

In some colleges' laboratory stockrooms, flammable solvents are stored in glass carboys with gravity dispensers, an extremely dangerous practice. Small wonder that industrial leaders, who require safe workers, complain that they have had to train otherwise capable college graduates in the habits of safety they should have acquired in college. This problem has been taken up with the colleges by the safety committee of the American Chemical Society. Ohio State University has its own chemistry safety manual and an active laboratory safety program. Many others would do well to follow its example.

Service and maintenance operations

A fourth area for application of safety on the campus is in the work operations of the staff, such as custodians, food service workers, and the maintenance and operating force generally. This is the

area in which the safety program is most certain to produce tangible savings. In a large institution, a moderately successful program of safety will very likely result in savings of several thousand dollars. The benefits realized in reduced losses from compensation payments, disability awards, sick leave and medical costs are not difficult to compute if accurate records of injuries and disbursements are kept. While the savings in a large university may be more startling than the savings by a small college, the smaller school stands to gain more by a program of safety in work operations, since the effect of any large loss is proportionately greater.

Radiation safety and industrial health

The fifth area of concern involves provision for adequate attention to radiation hazards and problems of industrial health. The Atomic Energy Commission encourages the employment of health physicists to set up proper safeguards in the storage, handling, and disposal of radioactive materials. Similar controls are desirable for the many common toxic substances in daily use on the campus, and for the detection and improvement of conditions which make the use of these substances dangerous; this area is the responsibility of the industrial health engineer. In a properly organized safety program the efforts of the industrial health engineer will be pooled with those of the person responsible for the general safety program.

Student activities

The sixth area, student activities, challenges the safety specialist or the administrator charged with safety on the smaller campus. In this area the problem is not always recognized because adequate accident records are not kept. However, some colleges maintain excellent records, such as those at the University of Minnesota, which are based on medical treatments in the health service. Records kept there have shown that the severest student injuries are liable to be suffered in off-campus recreational activities. It is our first impulse to consider that such activities lie beyond the scope of control; yet this is only partly true. By and large, each organized activity is under the direct control of a faculty adviser experienced in the activity and having a good understanding of the hazards involved.

Off-campus excursions assume herioc proportions. Cross-country hikes, bicycle outings, and sleigh rides in the vicinity of the campus may be reasonably safe. But what about club excursions to national parks, ski club trips to resorts hundreds of miles distant, mountain climbing, spelunking, white water canoeing? If the college is to recognize such potentially dangerous excursions, it must at least exert intelligent control of the hazards through thoughtful counseling of students by the faculty advisers. The emphasis might be on (*a*) control of the ubiquitous highway hazard—the love of going too far too fast, and (*b*) *proficiency* in the sport—qualification of the participant according to a set of standards. For the ski club, for example, this only means denying the novice an opportunity to injure himself by attempting too great a test without proper conditioning and preparation. On the bright side, an example of a potentially dangerous group activity under excellent control is that of the college flying clubs. Obviously, their record is good because they circumscribe their field trips with rigid safety precautions, require their novices to pass exacting qualifying tests, and travel above (not on) our highways.

Even beyond the challenge of student off-campus activities are other areas still less susceptible to intelligent controls. These are (*a*) fraternity hazing rites and (*b*) spontaneous mob activities. Both have safety implications, and both are subject to intelligent influence through advance planning by faculty members and student leaders, including representatives of student governing organizations. Fraternity and sorority groups, residence hall organizations, and student groups generally have shown ability to handle other safety matters, such as fire safety considerations in the planning of social events. Some have met the hazing problem head-on with considerable success at controlling abuses. Certainly student activities seem to be an area of concern in which the help of the students themselves is most necessary.

Administrative Patterns of Organization

Obviously, the direction or coordination of such a diversified safety program as is implied here requires the full time of an experienced safety specialist in the large university, or of a sincere and energetic faculty member who might have it as a collateral interest in the small college. The question arises on where the safety function should be placed in the organization chart of the institution. There is a tendency, particularly in the small or middle-sized organization, to assign safety to an operating department, or to put it into an already crowded police or security program.

These are provisional patterns, no doubt, and are generally not favorable to development of the safety program nor fair to the department charged with the safety responsibility.

The most widely accepted industrial safety pattern, in which the safety specialist reports directly to top operating management, is that adopted by the University of Illinois. Here the safety coordinator reports directly to the vice president and comptroller. He also serves as the secretary of the university safety and fire prevention committee, preparing reports representing the committee's action or opinion. He works constantly with the committee, which provides him with counsel and support, considers problems of general interest or major importance, and formulates policy.

Committee structure—the Illinois plan

The structure and membership of the Illinois committee combines academic and administrative skills, represents all three separate campuses of the university, and is dominated by faculty. Voting members are professors in mechanical engineering, safety engineering, safety education, chemistry, and architecture, and the assistant legal counsel. Ex officio members are the director of nonacademic personnel and the safety coordinator, serving as secretary. Advisory (and nonvoting) members are the superintendent of accident compensation; superintendent of safety and sanitation, physical plant department; and assistant superintendent of operations, physical plant.

Typical of the agenda of the safety and fire prevention committee are these subjects: Activation of report on dangerous chemicals; investigation of a mercury vapor hazard; review of accidents involving university-owned vehicles; protection of permanent records; reevaluation of policy regarding smoking in buildings; fire drill policy; first aid policy; proposed alterations to buildings.

The committee approach to safety problems is equally workable at a small college, where the duties of its executive officer might well be carried by a faculty member as a collateral responsibility. For such a college there is usually professional help in safety available from the outside. Insurance companies and fire insurance underwriters provide safety engineering services for colleges they insure. Other sources of help are the local fire chief and the State fire marshal, who will frequently review plans for new construction to check for fire safety. The members of the American Society of Safety Engineers, where they are available, are usually willing to contribute time to such work. Finally, within the college there are usually persons with special talents for work in the safety program.

Four Cardinal Factors

Safety is an integral part of the good educational environment. It is highly essential that college life and learning in that environment should promote attitudes conducive to safe living. Every college is exposed to some degree to the problems discussed here. And the solution of these problems requires a planned safety program, even though the structure of organization for safety and the method of administering it may vary widely according to the size and requirements of the individual institution.

To make the program effective, these four factors are of cardinal importance: (1) Active and sincere support by the administration; (2) assignment of responsibility for the supervision of the program to one person, whether as a full-time duty for a specialist in the large university or as a collateral duty assignment in the small college; (3) appointment of an advisory committee of faculty or administrative status to consult with the person supervising the program; (4) active participation of faculty, staff, and students in appropriate phases of the whole program.

English Scholarships To Be Recommended

THE NATIONAL COUNCIL of Teachers of English and its 142 affiliated organizations, with a combined membership of 75,000 are sponsoring a plan to select annually the top 435 high school English students and recommend them for scholarships.

Each high school will nominate its best juniors before May 1, 1958, and final decisions will be made in January 1959, when the nominees are seniors. High schools with fewer than 500 students in grades 10, 11, and 12 combined may nominate 1 candidate for the awards. Larger schools may nominate 1 candidate for each 500 students enrolled. Each State will be entitled to as many award winners as it has representatives in the Congress. Judging will be on the basis of recommendations, samples of the students' writing, and special tests.

Thirteenth National Conference on Higher Education Resolutions Adopted

The Thirteenth National Conference on Higher Education of the Association for Higher Education was held at Chicago, March 2–5, 1958. The resolutions on higher education adopted by the conference are quoted below.

The College Housing Loan Program.—We commend the efforts of the Congress of the United States and the Executive branch of the Federal Government to extend the amounts available for loans to qualified institutions of higher education for the financing of housing and other presently authorized facilities. We urge that the additional funds be made available at interest rates based upon the present flexible formula. We urge the Housing and Home Finance Agency to use every means of expediting action on applications for loans to the end that construction of needed facilities in educational institutions may be initiated with a minimum of delay.

Financial Assistance to Talented Youth.—Because of the great need of the country for the cultivation of the potentialities of its young people for all socially useful areas of service, and because of the financial barriers that at present prevent large numbers of young people from pursuing an education beyond the high school, we urge:

(a) State and local governments to make maximum efforts, through public funds, to provide and maintain diversified facilities for higher education of good quality at the lowest possible cost to students.

(b) Institutions of higher education to continue to encourage substantial gifts from private donors, corporations, and other nongovernmental agencies for scholarships and fellowships to highly qualified students and also for student loan funds in such institutions as do not at present have adequate capital funds for loan purposes.

Because of the present inadequacy of institutional and other programs for financial assistance to students, we urge the Congress of the United States to enact legislation providing Federal funds for scholarship purposes to aid highly qualified students to attend recognized institutions of higher education. We urge further that the amounts of such appropriations be sufficient to provide not less than 20,000 new 4-year scholarships for undergraduate students each year until a total of 80,000 are in use at the end of a 4-year period. We favor a larger number of such scholarships if the Congress can provide the necessary supporting funds.

In addition we urge the Congress to provide Federal funds for the support of a program of fellowships for 5,000 graduate students the first year of its operation.

We also urge that students granted scholarships and fellowships under any new Federal program that may be enacted be left completely free to choose their own subject-matter fields of study and occupational objectives in the recognized institutions they choose to attend, without any limitations imposed by their acceptance of such scholarships or fellowships.

Financial Support of Institutions of Higher Education.—Because institutions of higher education are finding it increasingly difficult in these times of rising costs, teacher shortages, and growing enrollments to secure critically needed funds to improve teachers' salaries and provide needed staff and facilities, we urge that State and local governments, as well as business and industry, labor organizations, philanthropic foundations, religious groups, and other nongovernmental agencies, review their programs of assistance to higher education with a view toward increasing their support for current operations and capital development.

Desegregation in Educational Institutions.—We commend those individuals and agencies whose leadership and example have contributed toward the achievement of the goal of equal educational opportunity for all American youth by eliminating racial segregation in educational institutions. At the same time, we call attention to the challenge presented by the unfinished aspects of the task and, while we recognize its inherent difficulties, the urgency of the present situation at home and abroad makes continued progress toward the solution of this problem vital to national integrity and imperative for the strengthening of the democratic way of life. We therefore urge public and

private agencies in those States which have made little or no progress to work with all deliberate speed to eliminate racial segregation from educational institutions.

ROTC Facilities.—We reaffirm the resolution of the Twelfth National Conference on Higher Education urging the Congress to establish a program of Federal participation in meeting construction and maintenance costs of physical plant facilities used for ROTC programs.

Science, Mathematics, Engineering.—We fully support the efforts currently in progress throughout the nation to strengthen the teaching of science, mathematics, and engineering. We would note, however, that most other academic areas similarly require strengthening. To stress one part of the curriculum to the neglect of others will introduce a dangerous imbalance in the education of the oncoming generation.

New Higher Education Units at N. Y. U.

NEW YORK UNIVERSITY is establishing an Office of Institutional Research and a Center for the Study of Higher Education. The first of these units will develop studies to improve N. Y. U.'s operational structure, and the second will offer a comprehensive program of research and training in the administration of higher education. Both units are to be organized and headed by John Dale Russell, formerly Assistant U. S. Commissioner for Higher Education and more recently Chancellor and Executive Secretary of the New Mexico Board of Educational Finance.

Proposed Changes at Michigan State

THE ACADEMIC SENATE of Michigan State University has voted to put the university on a year-round footing, effective in 1959. Under the new arrangement, students will be permitted to take a full quarter's load of 16 hours work in an expanded summer term, which will make it possible for them to earn the bachelor's degree in 3 years.

In another action, the senate approved a proposal requiring all June graduates, beginning in 1959, to take final examinations. Previously, spring graduates, except in special cases, have been exempted from final examinations.

The senate's action is subject to approval by the State board of agriculture.

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From the Office of Education

Faculty, Students, And Degrees in Institutions of Higher Education, Statistical Summary, 1955–56, by Dorothy Gray. Processed, 11 p. (Circular No. 514, February 1958.)

Higher Education Planning and Management Data, 1957–58: Salaries, Fringe Benefits, Tuition and Fees, Room and Board, by W. Robert Bokelman. Washington, D. C., U. S. Government Printing Office, 1958. Paper, 102 p. 60 cents. (Circular No. 517.)

The State and Nonpublic Schools, With Particular Reference to Responsibility of State Departments of Education, by Fred F. Beach *and* Robert F. Will, in cooperation with the Study Commission of the Council of Chief State School Officers. Washington, D. C., U. S. Government Printing Office, 1958. Paper, 152 p. $1.25. (Misc. No. 28.)

Teachers of Children Who Are Socially and Emotionally Maladjusted: A Report based on findings from the study Qualification and Preparation of Teachers of Exceptional Children, by Romaine P. Mackie *and* Others. Washington, U. S. Government Printing Office, 1957. Paper, 92 p. 45 cents. (Bulletin 1957, No. 11.)

Directory of College Courses in Radio and Television, School Year 1957–58, by Gertrude G. Broderick. Paper, 44 p. Free.

From Other Government Agencies

Fitness of American Youth. Report of the First Annual Conference of the President's Council on Youth Fitness and the President's Citizens Advisory Committee on the Fitness of American Youth conducted at the United States Military Academy,

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Obtain direct from the publishers. Prices are indicated when known.

Changing Values in College: An Exploratory Study of the Impact of College Teaching, by Philip E. Jacob. New York, N. Y., Harper and Bros., 1957. 174 p. $3.50.

Education And Human Relations, by Ashley Montagu. New York, N. Y., Grove Press, Inc., 1958. 191 p. Paper, $1.45, cloth, $3.50.

Mental Discipline In Modern Education, by Walter B. Kolesnik. Madison, Wis., the University of Wisconsin Press, 1958. 231 p. $3.50.

Part-Time Legal Education, A Study of the Problems of Evening Law Schools, by Joseph T. Tinnelly. Brooklyn, N. Y., The Foundation Press, Inc., 1957. 259 p. $4.

Professional Opportunities in Mathematics, 3d edition. A Publication of the Arnold Buffum Chace Fund. Buffalo 14, N. Y., The Mathematical Association of America, 1958. Paper, 24 p. 25 cents.

Psychology of Learning and Teaching Christian Education: Psychology for Christian Workers (with Teacher's Manual Supplement), by Thomas Meadows. New York, N. Y., Pageant Press, Inc., 1958. 393 p. $4.50. Supplement, paper, 98 p. $2.

The Longevity and Morbidity of College Athletes, by Henry J. Montoye *and* Others. 3747 North Linwood Avenue, Indianapolis 18, Ind., Phi Epsilon Fraternity, 1957. Paper, 139 p. $3.25.

Liberal Arts and Medical Education. Report of a Committee of the Faculty of the College of Liberal Arts and Sciences of Oberlin College. By Blair Stewart. Oberlin, Ohio, Oberlin College, 1957. Paper, 106 p.

Vocational And Professional Monographs, No. 12: *Teaching*, by William H. Burton. Cambridge 38, Mass., Bellman Publishing Company, 1957. Paper, 40 p. $1.

Nuclear Energy in the South, Redding S. Sugg, Jr., *ed.* Baton Rouge, La., Louisiana State University Press, 1957. 151 p. $3.50.

Denison: The Story of an Ohio College, by G. Wallace Chessman. Granville, Ohio, Denison University, 1957, 451 p.

Russell Sage Foundation, Annual Report 1956–1957. 505 Park Ave., New York 22, N. Y., Russell Sage Foundation. Paper, 63 p.

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